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A SUCCESSFUL ALFALFA AND TRUCK FARM IN SOUTHEASTERN OHIO

SIR: I have the honor to transmit herewith and to recommend for publication as a circular by the Experiment Station, the accompanying manuscript entitled "A Successful Alfalfa and Truck Farm in Southeastern Ohio."

This paper, which has been prepared by Mr. W. A. Lloyd, Assistant in the Department of Cooperation, is based on a study of a farm in Hocking County, and develops the possibilities in connection with truck and fruit growing near a good local market and of growing alfalfa without great effort on the river bottoms in some sectioms of the state. It has been prepared in cooperation with the Office of Farm Management, Bureau of Plant Industry, United States Department of Agriculture, and was read and its publication concurred in by the Chief of that Office.

Respectfully,

L. H. GODDARD, *Chief of Department of Cooperation.*

Approved: CHAS. E. THORNE, *Director.*

A SUCCESSFUL ALFALFA AND TRUCK FARM IN SOUTHEASTERN OHIO

By W. A. LLOYD

A FOREWORD

The patient agricultural investigator often finds, after years of painstaking work with his pots and plots in the laboratory and field, that the application of the principle for which he has been searching has long been practiced by successful farmers. Indeed the object of much investigation is to ascertain the principles underlying successful practice. The Director of the Ohio Experiment Station has said to the farmers of Wayne County, "My greatest ambition is to do as good farming as is already being done by the farmers of this county and by such farming to discover facts that will be useful to them".

It is coming to be quite generally recognized that the best system of farming for any section is usually already practiced in that section. The entire scheme may not be found on any one farm; indeed, usually it is not. Very few men are successful along all lines of endeavor. A composite picture of the best practice on several successful farms in any section will usually illustrate pretty well the best farm practice for that section.

These successful farmers do not generally recognize that they have discovered anything; what they are doing is often the result of accident or force of necessity, or is the development of ideas handed down from previous generations. In their busy lives they know certain methods will produce certain results, but they have not had time to determine just why they do so. It also usually happens that their neighbors take them even less seriously than they take themselves. The men who "make good" on the farms are known among their fellows as "lucky" or "fortunate" individuals, and very little inquiry is made into the causes which have produced the results.

It thus happens that in no phase of scientific investigation can it so truly be said "There is nothing new under the sun" as in agricultural research. There has therefore arisen a system of scientific investigation known as the study of farm practice. This study consists in the investigation of those farms which are particularly successful along certain lines; in ascertaining why they are successful and how far the methods they are pursuing are applicable to other farms.

The following report is the result of such a study and is the first of a series of such investigations by the Ohio Experiment Station, in the course of which it is hoped to illustrate some solutions of farm problems which have been worked out by "the man on the job."

THE FARM DESCRIBED

The farm under discussion is located in Star Township, Hocking County, near the town of Haydenville, the seat of the National Fireproofing Co.'s factory, a concern employing about two hundred men. It is five miles from Nelsonville, a town of eleven thousand inhabitants and the center of an industrial community of probably sixteen to eighteen thousand people. It is seven miles from Logan, the county seat of Hocking county, with a population of six thousand. The farm is on a limestone pike connecting Logan and Nelsonville, and is in one of the greatest coalfields in Ohio. The supply of coal, with the present system of mining, is said to be sufficient for two hundred years.

Soil and Drainage. The farm contains 500 acres of land. It lies on both sides of the Hocking River and consists of 120 acres of river bottom land and 380 acres of hill land. Of the former about two-thirds is "first" bottom, subject to overflow. The soil of this is a very fine sand and silt loam underlaid with a coarser sand and, at the depth of two to three feet, by nearly pure sand. At a depth of about twelve feet a stratum of gravel is reached. The second bottom is a clay soil with some sand, which responds well to tile drainage. A complete system of drainage has not been installed, though the drains that have been laid are giving good results. An outlet for the drainage water is found in a well which is dug to the quicksand and walled with sewer tile This well is capped over at a depth beneath that reached by the plow. A large part of the second bottom land along this river is apparently acid and very much in need of tile drainage. A system similar to or better than that in use on this farm could very probably be installed with profit on much of it.

The hill land is of the same general character as other non-glaciated soil of the section. It is made up of disintegrated sandstone, limestone, shale, fireclay, coal and iron ore of the coal measures, which have made a soil somewhat variable. The surface of the upland portion of the farm is quite broken. About half the area is covered with a second growth of timber and the remaining portion, amounting to nearly 200 acres, is in permanent pasture, except 40 acres which are in fruit.

Timber. The original timber consisted of white oak, poplar, hickory and other hard woods, and has nearly all been cut away. Some of the second growth is being utilized for bank props, for which a ready market is found at the nearby mines. The locusts thrive well, and much of the roughest portion of the upland might be profitably set to these and other trees.

Pastures. Much of the pasture land is underlaid with limestone and is therefore well adapted to the growth of blue grass. It has been given little care other than an annual removal of the sprouts which are so troublesome in pastures in many parts of Southeastern Ohio.

Live-stock. The permanent live-stock consists of four milch cows ten work horses and one brood sow. On the pasture from 150 to 250 sheep have been kept. From 15 to 20 hogs are fattened annually. A flock of 200 hens is kept.

Farm Crops. The botton land, which is the only part of the land occupied by farm crops, is utilized this year as follows: alfalfa, 30 acres; corn, 25 acres; wheat, 20 acres; potatoes, 15 acres; melons, 7 acres; cabbage, cucumbers, onions, beets, etc., 8 acres; household and waste, 15 acres.

Fig. 1. An Alfalfa Meadow

METHODS AND ROTATIONS

Alfalfa. Alfalfa was introduced by accident sixteen years ago. Seed was purchased for mammoth clover, which was sown on wheat in April. About one-half of the seed proved to be alfalfa, which came up nicely in the wheat and was thought at the time to be sweet

clover. The plants came on well after the wheat was harvested, and upon investigation were found to be alfalfa. This led to the establishment of the five to six year rotation: corn, wheat, followed by alfalfa for three or four years. During all these years this method of seeding has been uniformly successful. The method of seeding in wheat is as follows: the alfalfa seed is sown during the first part of April each year, when the soil is dry, and is covered by using a spike-tooth harrow. It is desirable to get the seed into the soil before the usual "wet spell" that frequently comes the latter part of April. Wheat is not considered a profitable crop, and with the development of the alfalfa propaganda in Ohio all the "difficult ways" of succeeding with this crop have been tried, but none have been found as good on this farm as that discovered by accident.

About the middle of August the wheat stubble is clipped and a good crop of alfalfa hay is cut about the first of the following October. No advantage has been found from allowing this growth to remain on the ground through the winter. The alfalfa is grown exclusively on the first bottom, on which water frequently stands for several days at a time, particularly during the winter and spring. This does not appear to be injurious to the crop, nor does the sand and sediment left in the wake of the flood. The plants are successful in finding their way through a deposit of from two to three inches and show increased vigor from the effect of the overflow.

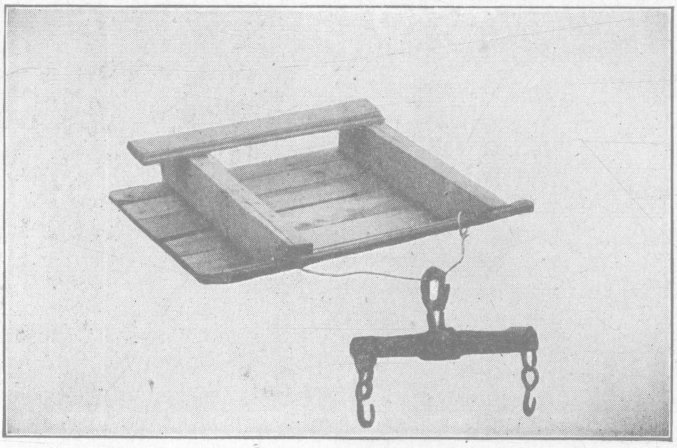

Fig. 2. Drag used for covering alfalfa sown in the standing corn.

Last year a small field was seeded to alfalfa in the standing corn with good results, and this year about 20 acres have been seeded in the same way. The seed is sown after the last cultivation, and

covered with a small plank drag. This is a rather novel, homemade implement, 34 inches wide and 22 inches long, that works between the rows of corn. (See Fig. 2.)

This dragging covers the alfalfa nicely and leaves the ground in a fine, level condition. The same method of seeding is followed on the lands of the New York Coal Co., at Nelsonville, where 50 acres of alfalfa were successfully seeded in this way last year. Should this method continue to be successful it will take the place of the present practice of seeding in the wheat. That both of the above methods, in fact that many different methods of seeding are being successfully followed by alfalfa growers in Ohio, and that no one method can be said to be the correct one for all conditions, is developed by an investigation being conducted by this Department, the report of which will be published in a forthcoming circular.

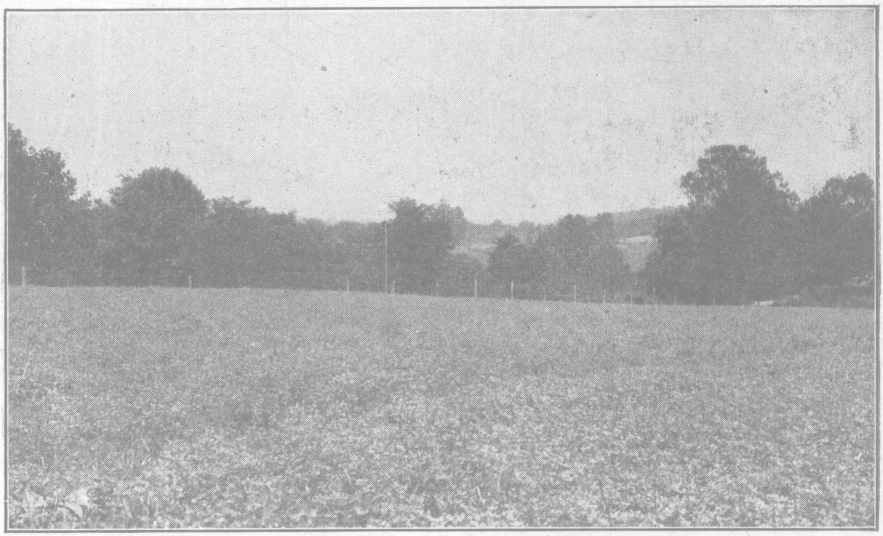

Fig. 3. This alfalfa field was seeded in the wheat in the spring of 1909. Second cutting, 1910, ready July 18th.

The method of harvesting the alfalfa is also somewhat different from that ordinarily pursued. The alfalfa is cut in the morning as soon as it is dry from the dew, tedded and allowed to lie in the swath during the first day. The second day it is raked up and drawn directly from the windrow to the barn or the market. In this way excellent hay is made. Except in case of threatened rain, no alfalfa is ever put into the shock. It is cut three times each season, the total yield being from four to six tons per acre. The alfalfa is usually allowed to stand three to four years, after which the land is plowed for corn.

Corn. This is a very important crop on this farm; scarcely less so than the alfalfa. The variety grown is a cross-bred corn originated by the grower by crossing Leaming with a local variety. It possesses the Leaming type to a considerable extent, is early maturing, a vigorous grower and seems well adapted to his conditions. The seed is drilled in rows three feet four inches apart and fifteen inches apart in the row. The cultivation is frequent and shallow. The crop is cut by hand and husked with the shredder. The yield is from 75 to 90 bushels per acre. Yields in excess of the latter figure have been secured as a 20-acre average. The corn this year gives promise of making good.

Fig. 4 The second cutting of alfalfa ready for the knife, July 18th.

An interesting observation in connection with this year's crop is the influence of environment and the adaptability of the corn to the condition in which it finds itself. At the time of planting, through a mistake, the wrong plate was used in the planter and the corn was distributed only about 10 inches apart in the row on part of the field before the mistake was discovered. No thinning was done. In the part of the field planted regularly a very large number of stalks set two good ears; indeed, by actual count in different parts of the field more than a half of the stalks had two, and in some cases three ears. On the more thickly planted portion of the field very rarely was more than one ear found on a stalk.

Wheat. This crop has yielded only about 15 bushels per acre and is not considered profitable. It has only been retained in the rotation as a means of securing alfalfa.

THE MARKET GARDEN

On that part of the farm devoted to potatoes, melons, cabbages, etc., no particular rotation system is used; although, except in the case of potatoes, the same crop is rarely raised on the same land more than two years in succession.

Potatoes. This crop produces a larger amount of gross income than is secured from any other one crop on the farm. It is grown exclusively on the second bottom. Repeated failure has followed attempts to grow it on the first bottom. Early varieties are planted, as the late varieties have proven unprofitable. Potatoes have been raised for the last 15 years on the same field. Crimson clover and rye are sown after the potatoes have been harvested. The rye is manured during the winter, using from 10 to 12 tons per acre, and is turned under in the spring after it has made a good growth. The potatoes are put in the ground with a planter and about 500 pounds per acre of high grade steamed bone is used in the row. The tubers are harvested with a digger. Alternate rows are dug and the vines thrown on the intervening undug rows, and the rows thus vacated are planted to late cucumbers. The digger leaves the ground in good condition for the cucumbers. The only further attention needed is the running of a small one-horse roller over the rows. This roller is a handy contrivance made from a sewer tile. (See Fig. 5.) In digging the remaining rows the hitch to the digger is so arranged that very few cucumber vines are injured from trampling by the horses.

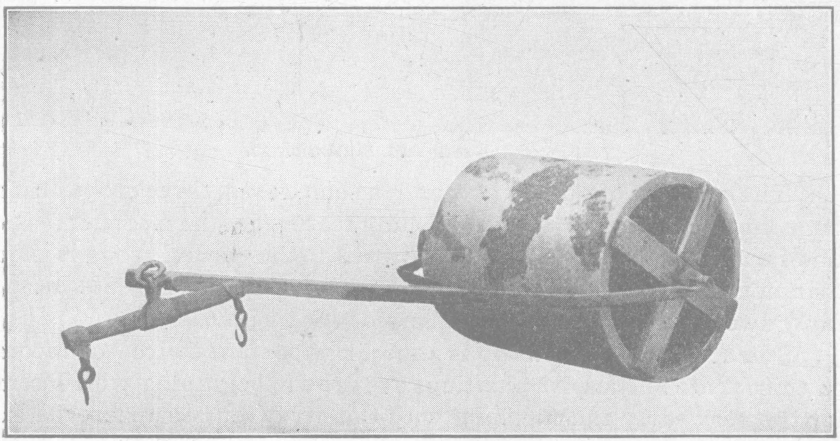

Fig. 5. A handy one-horse roller.

There is an almost unlimited local demand for pickles and the net profits from the secondary crop are sometimes in excess of that derived from the first.

The Melon Crop. This crop has been a very profitable one in the past. For three years it has been damaged by an attack of a small larva which burrows in the root and causes the plant to die. A 7-acre field was almost completely ruined in this way this year. Experience in former years with this larva, which it is suspected may be that of the striped cucumber bug, has caused to be taken out what is termed "mutual insurance"; i. e. after the melons are planted, two rows of late cabbage are planted between each two rows of melons. These are to be removed if the melons escape destruction. (See Fig. 8.) This has proven particularly cheap insurance this year, as nearly the entire crop of melons has been destroyed and the late cabbage looks very fine.

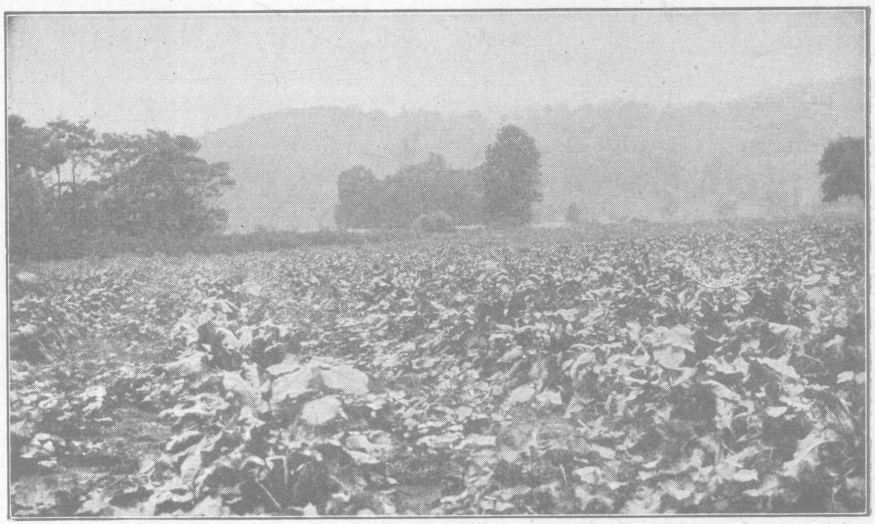

Fig. 6. Beets and Muskmelons.

The practice of raising two, and in some cases, three crops on the same land each year is a distinguishing feature in the management of this farm. In this way the area devoted to the garden crops is more than doubled. It is practiced with the beets, onions, late beans, early sweet corn, melons and turnips. (See Fig. 6.)

Sweet Corn. This crop is another important source of income on this farm. Successive plantings are grown, beginning with Premo for the very early and finishing with Country Gentleman for the latest. Plantings are so timed as to give a constant supply of green corn from July until frost.

DISPOSITION OF CROPS.

So far as possible all crops are marketed direct from the field. Alfalfa hay is sold at Logan and Nelsonville at $12 per ton delivered loose from the field. The shrinkage on alfalfa hay between harvest and January under ordinary storage conditions has been ascertained to be about 20 percent. Corn was sold last year at 70 cents per bushel and potatoes at 85 cents. Of this latter crop the supply was sold so closely that seed had to be purchased this spring. No loss was entailed by this operation, however, as the necessary seed was purchased at 25 cents per bushel. During the truck season wagons run every day with beets, onions, sweet corn, beans, cucumbers, and other garden stuff to supply the wants of the mining and factory people.

Fig. 7. Cabbage and muskmelons

The greater part of the produce of the farm is sold at wholesale to dealers. This method is preferred, but when the local Merchant's Association sets a buying price that is lower than the market justifies, wagons are immediately put on the street and a prompt adjustment of the price usually follows. It is not at all unusual to see four or five wagons loaded with the produce of this farm on the streets of the market town at one time. The reputation of the quality of the products of the farm is such that much of it is engaged in advance; indeed, often before it is planted.

MANURES AND FERTILIZERS

Manure is bought and shipped from the mines and from Nelsonville. Usually about ten cars or from three to four hundred tons are secured in this way annually. This manure costs $2 per carload at the mines; the freight rate is 40 cents per ton and the total cost of the manure including labor is 75 cents per ton spread on the field.

Hands are sent from the farm to load the cars and it is taken direct from the car to the field. The manure is used on rye for potatoes and on the truck land. Manure is also hauled from Nelsonville during the summer. Each team can draw two 2-ton loads per day. This manure is put in a large heap and forked over several times and thus made into a compost for use with the melons. In addition to the manure, about 10 tons of high grade steamed bone is used, which costs $27 per ton in car lots. This is used on the wheat at the rate of 200 pounds per acre and also on the potato and garden land.

Fig. 8 Cabbage planted in the melon field as insurance against loss of the latter crop

FEEDING AND CARE OF LIVE-STOCK

The live-stock operations on this farm are very small and are destined in the future to be even smaller. Considering the cheap source of manure and the ready and handy markets it is considered there is no class of live-stock to which the corn and alfalfa hay could be fed with profit. The live-stock kept on the farm is very largely of a permanent nature. Four cows are kept to furnish an abundance of milk and butter for the family. Two of these are fresh in the spring and two in the fall. They are fed alfalfa hay and short

corn. Two litters of pigs are raised, one spring and one fall. All are slaughtered on the farm and used by the household or sold as dressed meat to families living on the farm.

Horses. Some colts are raised; these are to supply the needs of the farm in taking the places of worn out and diseased animals. In the past twenty years very few horses have been sold. The loss of horses has been quite large. In one year animals were lost to the value of $800 from what was thought to be eating ensilage. To test this belief the next year the same feed was tried on a mule and it died. Since this time no ensilage has been fed to horses. During the winter when horses are not doing heavy work one feed of alfalfa hay and one of shredded fodder is given each day. During the latter part of the winter a small amount of molasses is added to the shredded fodder. This adds to the palatability of the ration and also to its feeding value. Corn and alfalfa hay are fed during the summer,

Sheep. Sheep have been really the only livestock proposition on the farm and they will be discontinued. The hill land is naturally adapted to sheep, but the devastation wrought by dogs makes it impracticable to keep them. A few years ago a solution of the dog nuisance was evolved which worked very satisfactorily for a time. The cooperation of a few neighbors was secured, in all controlling several thousand acres of land. One of the farmers then went to the leaders of the hunters and talked to them after the following fashion: "You want to hunt. We don't want you to. Now, it does not seem right to deprive you of your sport altogether. If you will keep your dogs off our lands during the time our sheep are in the pasture you can hunt the rest of the year." This plan was agreed to and the pact was kept for a number of years and worked very satisfactorily. It fell into disuse as much from the non-insistance on the part of the land owners as from any other cause. The plan has many things to commend it. It gives to the hunters a semblance of what they believe to be their rights, puts them on their honor and promotes their good will rather than their enmity. It is certainly worthy of further trial.

Poultry. The poultry is a source of considerable income during the winter months, when it is given good care; but with the coming of summer everybody gets busy with other work and the chickens are left to scratch for themselves. From November until May the hens are fed a morning ration of wheat in the litter; a mash of small potatoes mixed with enough alfalfa leaves gathered from the barn floor to make it stiff, for a noon feed, and shelled corn in the litter at night. Beef scrap is kept before them at all times, and green food furnished by cabbage, sugar beets and other vegetables saved from the garden.

THE ORCHARD

Eight years ago forty acres of hill land were set to an apple orchard; Rome Beauty, Grimes' Golden and Stayman Wine Sap being the varieties chosen. Peach trees were used as fillers between the apple trees. The peach trees have borne profitable crops and have a very satisfactory crop this year. All the trees are set in the sod and are dug about each year. They have not been fertilized or mulched. The trees have made a good growth. They are pruned, sprayed and well cared for. As soon as the apple crop becomes profitable a cold storage building will be erected in which to handle it. A small plum orchard has also been planted from which a satisfactory crop is being harvested this year.

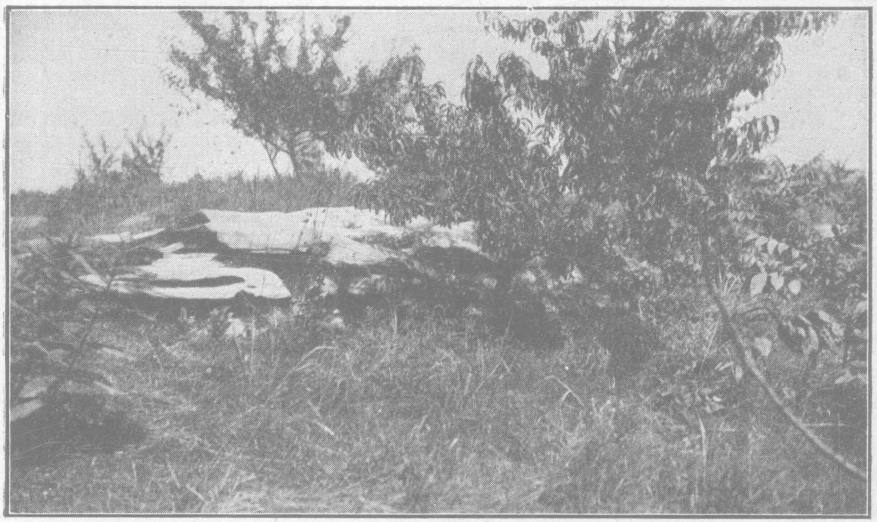

Fig. 9. A part of the orchard showing the rocky condition of the upland.

THE FARM LABOR

The management of the labor proposition on this farm is worthy of particular consideration. The hands employed regularly reside on the farm. They are paid a cash wage of $1.20 for ten hours work. In addition to this each head of a family is furnished a house, rent free, with a garden and the use of a horse to plow and tend it. A part of the labor is furnished by boys, children of the families living on the farm. During the busy season some extra help is employed. In the winter the manure is procured and spread on the fields and a number of bank props are cut and marketed. When work is slack some of the men are permitted to work in the factory or mines for short periods, returning to the farm again when there is need for them. During the time they are working away from the farm they pay $3.00 per month house rent.

The operator of this farm is a splendid manager of labor, very considerate of his men, and has so systematized the work that each man does Sunday chores only at long intervals. In deciding on any detail of farm work the workman who is to have it in charge is consulted, his ideas secured, and he is led to suggest the method he himself wishes to pursue. If satisfactory this is adopted as the laborer's idea and both the diligence and pride of the man in the successful execution of his task are assured. It is largely owing to this happy faculty that it has been possible to keep a good corps of steady, efficient men on a farm that is situated in the heart of one of the great industrial centers of Ohio.

FARM EQUIPMENT

The machinery for the operation of the farm consists of a very complete outfit, well adapted to the operations involved. There may be enumerated a traction engine, husker, shredder, self-binder, mowing machines, side-delivery rake, potato planter, potato digger, grader, power sprayer, plows, cultivators, etc., on which the owner places a total valuation of $3,500.

RECAPITULATION

LAND INVESTMENT

120 acres (including improvement) which is valued at $100 per acre, total value	$12,000
380 acres (including improvements) which is valued at $25 per acre, total value	9,500
Total	$21,500,00

For this the tenant pays a cash rent of $1,200, or nearly 6 percent. If we deduct the value of the hill land, from which he gets very little return, he is paying $10 per acre for the remaining producing part of the farm, or 10 percent on the investment. Figuring 4 percent as a fair return for the money, this would represent a land value of $250 per acre.

It should be said here that this farm is an estate and that the tenant is one of the heirs. The estate is so disposed of by the testator that it cannot be sold during the life of the surviving wife, the mother of the tenant. It is stipulated in the lease that the landlord shall furnish the alfalfa seed used on the farm.

The following items of gross receipts and expense are taken from the day book of the farm for the year 1909.

GROSS RECEIPTS

Alfalfa hay	$1,295	
Corn, 700 bushels at 70 cents per bushel	490	
Wheat, 100 bushels at $1.00 per bushel	100	
Total farm crops		$1,885
Potatoes, 3,000 bushels at 85 cents per bushel	$2,550	
Melons	297	
Cabbage	150	
Sugar corn	500	
Other small stuff	400	
Total garden		$3,897
Sheep (wool only)	$175	
Hogs	300	
Chickens (eggs)	150	
Total live-stock and poultry		$ 625
Bank props	$275	
Outside labor (husking and shredding)	$150	
Total miscellaneous		$ 425
Total gross income		$6,832

EXPENSE

Rent	$1,200	
Interest on investment—		
Live-stock (owner's valuation) $2,260		
Equipment (owner's valuation) 3,500		
Total $5,760 at 5%	278	
Labor	1,084	
Manure	225	
Commercial fertilizers	270	
Five percent depreciation on machinery	175	
Repairs on machinery (1909)	160	
Taxes	40	
Seeds	70	
Insurance	5	
Total expense		$3,457
Net returns from the farm		$3,375

No household account is kept, so that the surplus over the cost of living is not obtainable. The tenant considers his time worth $8 per day. This would amount to a salary of $2500 per year, and would still leave him a comfortble balance of $875 for a sinking fund.

The family lives well. It is a home of books and music, of education and refinement. Each of the family of seven children either has received or is receiving a high school education. To give them this advantage it has been neccessary to send them away from home. The expense has been considerable and all years have not been as prosperous as 1909.

CONCLUSIONS.

The splendid success achieved on this farm is, as is nearly always the case, largely attributable to the personality of the man. It is the fruit of a dogged determination to win, and of industry intelligently applied. To use his own words, "I had to succeed." The farm is no better than others along the river, some of which are even more advantageously located than this one. But he saw the need of the industrial community at his door and set about to supply it. He has made the best use of his land. He has worked along the lines of least resistance. He produces the crop that gives the largest net returns for the labor. He grows what the other fellow doesn't. He studies the market. When a demand arises he has something to supply it. He possesses the rare combination of being a good producer and a good seller done up in the same package. He is a good manager of men. He is willing to live and let live. If we were to measure his success on a percentage basis we would make it:

Individuality..... .... 75 percent
Advantageous location of farm..... .....15 percent
Land..... ....10 percent

The justice of the small percent given to the land in this particular case is apparent from the following: When he took charge of the farm, 22 years ago, the gross returns from it were less than the amount he now pays for rent. The soil upon which he now produces his crops of 175 bushels of potatoes per acre, his melons and garden vegetables, produced only 8 bushels of rye per acre. This land he brought up to its present high state of fertility by the use of cowpeas and manure. Now he no longer needs the cowpeas. In four years by this method he increased the yield of rye from 8 to 22 bushels per acre.

Yet the advantageous location of the farm has had much to do with the success that has been won. It should by no means be considered that such results are obtainable on a farm situated remote from markets, which would necessitate expensive shipping and marketing. However, there are opportunities near every large manufacturing plant for a few such farms as this. The important thing is, this man saw the opportunity and took advantage

of it. There are other farms in this valley even more advantageously located than this one, with more bottom land and nearer the same markets, that are being managed as corn and timothy hay propositions whose owners say they are barely breaking even.

The cheap and handy manure supply has made the elimination of live-stock possible. The 380 acres of hill land he feels to be an incumbrance. He would gladly be rid of it. Aside from the 40 acres set in fruit it will be largely abandoned. He sees good money in it as a forestry proposition; the locust thrives well on it, but he feels that he has his hands full. He is working up to the limit, and does not wish to take on more care.

Fig. 10. Plant of the National Fire Proofing Company. An important factor in the success achieved on this farm.

His method of alfalfa growing is probably only adaptable to those similarly situated. Sweet clover, which grows everywhere in this valley, has thoroughly inoculated the soil and the annual deposit of sediment brought down from a limestone area has taken care of the lime requirements. The first bottom lands of this river seem to be naturally adapted to the growth of this crop. Methods which have succeeded here would probably succeed on other farms where similar conditions prevail. Alfalfa has not found a very wide adaptation in southeastern Ohio. Its principal home seems to be in the

bottom land along the Muskingum, the Ohio, the Scioto and the Hocking Rivers and their tributaries. To farmers in these valleys and to others similarly situated his methods are of interest and worthy of experimental trial.*

*The name of the man operating this farm is withheld at his request, as he wishes to avoid the correspondence which the publicity of this circular would probably bring him. His farm has been visited on different occasions by a representative of the Experiment Station, his growing crops inspected and his books examined. The manuscript of this circular was gone over carefully with him before publication and has received his approval.

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